

US009890210B2

(12) United States Patent

Zeller et al.

(10) Patent No.: US 9,890,210 B2

(45) **Date of Patent:** *Feb. 13, 2018

(54) ANTAGONIST ANTIBODIES DIRECTED AGAINST CALCITONIN GENE-RELATED PEPTIDE

(71) Applicant: **Teva Pharmaceuticals International GmbH**, Jona (CH)

(72) Inventors: Joerg Zeller, Ann Arbor, MI (US);

Kristian T. Poulsen, San Francisco, CA
(US); Yasmina Noubia Abdiche,
Mountain View, CA (US); Jaume Pons,
San Bruno, CA (US); Sierra Jones
Collier, Menlo Park, CA (US); Arnon
Rosenthal, Woodside, CA (US)

(73) Assignee: **Teva Pharmaceuticals International GmbH**, Jona (CH)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal dis-

claimer.

(21) Appl. No.: 15/588,432

(22) Filed: May 5, 2017

(65) Prior Publication Data

US 2017/0240622 A1 Aug. 24, 2017

Related U.S. Application Data

- (60) Continuation of application No. 15/147,265, filed on May 5, 2016, which is a continuation of application No. 15/044,552, filed on Feb. 16, 2016, now Pat. No. 9,365,648, which is a continuation of application No. 14/719,015, filed on May 21, 2015, now Pat. No. 9,328,168, which is a continuation of application No. 14/251,925, filed on Apr. 14, 2014, now Pat. No. 9,115,194, which is a continuation of application No. 14/086,816, filed on Nov. 21, 2013, now Pat. No. 8,734,802, which is a continuation of application No. 13/870,871, filed on Apr. 25, 2013, now Pat. No. 8,597,649, which is a continuation of application No. 13/179,846, filed on Jul. 11, 2011, now Pat. No. 8,586,045, which is a division of application No. 12/093,638, filed as application PCT/IB2006/003181 on Nov. 2, 2006, now Pat. No. 8,007,794.
- (60) Provisional application No. 60/736,623, filed on Nov. 14, 2005.
- (51) Int. Cl.

 A61K 39/395 (2006.01)

 C12P 21/08 (2006.01)

 C07K 16/18 (2006.01)

 A61K 39/00 (2006.01)

(52) U.S. Cl.

CPC *C07K 16/18* (2013.01); *A61K 2039/505* (2013.01); *C07K 2317/21* (2013.01); *C07K 2317/24* (2013.01); *C07K 2317/33* (2013.01); *C07K 2317/34* (2013.01); *C07K 2317/54*

(2013.01); C07K 2317/55 (2013.01); C07K 2317/565 (2013.01); C07K 2317/567 (2013.01); C07K 2317/76 (2013.01); C07K 2317/92 (2013.01)

(58) Field of Classification Search

None

See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

4,814,567 A	3/1989	Cabilly et al.
5,116,964 A	5/1992	Capon et al.
5,500,362 A	3/1996	Robinson et al.
5,545,806 A	8/1996	Longberg et al.
5,545,807 A	8/1996	Surani et al.
5,569,825 A	10/1996	Longberg et al.
5,625,126 A	4/1997	Longberg et al.
5,633,425 A	5/1997	Longberg et al.
5,661,016 A	8/1997	Longberg et al.
5,750,373 A	5/1998	Garrard et al.
5,821,337 A	10/1998	Carter et al.
5,851,556 A	12/1998	Breton et al.
5,932,215 A	8/1999	De Lacharriere et al.
5,938,586 A	8/1999	De Lacharriere et al.
6,180,370 B1	1/2001	Queen et al.
6,168,809 B1	8/2001	De Lacharriere et al.
6,313,097 B1	11/2001	Eberlein et al.
6,344,438 B1	2/2002	De Lacharriere et al.
6,509,014 B1	1/2003	De Lacharriere et al.
6,521,609 B1	2/2003	Doods et al.
6,586,458 B1	7/2003	Plachetka
6,737,056 B1	5/2004	Presta
6,767,056 B2	5/2004	Presta
7,479,488 B2	1/2009	Mueller et al.
(Continued)		
(Sommaca)		

FOREIGN PATENT DOCUMENTS

CN 1308676 5/2001 CN 1671711 9/2005 (Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 13/621,981, filed Sep. 18, 2012, Poulsen et al. (Continued)

Primary Examiner — Christine J Saoud

Assistant Examiner — Jon M Lockard

(74) Attorney, Agent, or Firm — Fish & Richardson P.C.

(57) ABSTRACT

The invention features methods for preventing or treating CGRP associated disorders such as vasomotor symptoms, including headaches (e.g., migraine, cluster headache, and tension headache) and hot flushes, by administering an anti-CGRP antagonist antibody. Antagonist antibody G1 and antibodies derived from G1 directed to CGRP are also described.

15 Claims, 16 Drawing Sheets